Spatial, temporal, and length distributions of marked and unmarked juvenile Chinook salmon in nearshore surface waters of Puget Sound

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From April through October, 2003, we conducted surface trawl (townet) studies to compare spatial, temporal, and length distributions of hatchery and wild juvenile Chinook salmon (Oncorhychus tshawytscha) in nearshore Puget Sound. Sampling included six river mouth estuaries and several marine areas in between them. 52 sites were sampled between the Nooksack River estuary in the north, and the Nisqually River estuary in the south. A total of 668, 10-minute tows were successfully completed, and 3,175 juvenile Chinook captured. Unmarked Chinook were often more widely distributed than marked (adipose fin clipped or coded wire tagged) Chinook with respect to time, space, and individual size. This suggests that wild Chinook use estuarine habitats more extensively than do hatchery fish. In addition, areas in the southern, more urbanized, or hatchery-dominated systems showed higher peak Chinook catches but more rapid seasonal declines in Chinook abundance. This expanded sampling improves our landscape-scale understanding of the estuarine ecology of juvenile Chinook, including evaluation of effects of different oceanographic characteristics and degrees of human influence. Incomplete and inconsistent marking of hatchery fish complicates interpretation of these results. Future work will include detailed analysis of Chinook otoliths, scales, and diet, and associated fish assemblage composition.